Cancer Types in Pathological Samples Referred to Educational Hospitals in Birjand During the Past Three Years (2011 - 2013)

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Abstract

Introduction: Cancer is ranked as the third leading cause of death in Iran. Today, more than 20 million people worldwide suffer from this disease. By the year 2030, this number is predicted to reach 75 million. Regarding the importance of cancer and its outbreak and different age patterns for cancer outbreak and also the occurrence of cancer in different geographic regions, the current study aimed at studying the occurrence of this disease during 3 past years in order to determine the epidemiologic characteristics of the cases among patients visiting educational hospitals in Birjand, Iran.

Methods: In this cross-sectional study, patients visiting educational hospitals affiliated to Birjand University of Medical Sciences (BUMS) from December 22, 2011 to December 22, 2013 were assessed. The required data was collected from medical records of patients. Demographic data such as age, gender, types of cancer, and the total number of pathological cases were collected and recorded. The obtained data was analyzed by means of SPSS (V;15. using $\chi 2$ and ANOVA test).

Results: The results show that 458 out of 2631 of biopsy samples referred to the pathology wards in the educational hospitals of BUMS suffered from cancer, among whom 257 (56.1%) were male and 201 (43.9%) were female. The most common cancers were those of the brain and the spinal cord (15.1%), skin (14.8%), and the breast (14%). The mean age of the patients was 60.35 ± 17.15 years. The most common cancer in men was stomach cancer (17.1%), and the most common cancer in women was breast cancer (31.8%). There could be found a significant relation between the type of cancer and gender (P = 0.001).

Conclusions: Considering the importance of cancer and the possibility of prevention and treatment in the early stages of most cancers, and carrying out research projects to find risk factors related to common cancers in the area, one can use mass media for further awareness of the public and their education; and also help patients who pass away as a result of lack of awareness.

Keywords: Cancer, Epidemiology, Age, Gender, Birjand

1. Introduction

Cancer is a potentially fatal disease, mainly caused by the impact of environmental factors that change genes. This change results in creating and developing a mass of abnormal cells (1). This disease is known as the third leading cause of death in Iran (2). Today, a critical number of people at different age groups are suffering from cancer. Predictions indicate that, in the following years, the number of cancer survivors, most of whom are in less developed countries, will reach 75 million (3, 4). However, according to some scientific sources, the number of cancer survivors will reach 15 million people in 2020 and more than 50% of this population will be living in developing countries. In addition, the number of cancer survivors, in Iran, is estimated to be 98 to 100 in every 100000 individu-

als (5).

Although the number of cancer survivors is increasing in the country, mean age of cancer survivors has had a downward trend in the past years. The mean age of patients with cancer is reported as 50 - 70 years during the past years. Compared to the most frequent age group suffering from cancer in developed countries, findings reveal the prevalence of cancer in lower age groups in Iran (5, 6).

According to the presented statistics in 2012, the most common cancers in European countries were breast cancer and prostate cancer in women and men, respectively (7).

The results of various studies in Iran indicate that skin cancer is the most common cancer among the elderly of the society. Generally speaking, skin, stomach, prostate, and bladder cancers are respectively more common than

the others. In older men, the incidence of stomach cancer and bladder cancer are ranked as the second and the third, respectively, but in older women these ranks are recorded for breast and stomach cancers, respectively (8).

In the national anti-cancer programming, research on this disease plays a pivotal role. Considering the high costs of treatment in developed stages of the disease, it is economical to invest in research on cancer in advance. Due to differences in the pattern of common cancers in the area, i.e. geographic conditions, habits and the lifestyle, identifying common cases of cancer in each area is of great importance. Thus, the current study was conducted on the past 3 years' (2011 -2013) occurrence of cancer in order to determine the epidemiologic characteristics of the cases among patients visiting educational hospitals (Imam Reza and Vali-e-Asr hospitals) in Birjand, Iran.

2. Methods

The present study was carried out on the data derived from the pathology centers in the hospitals of BUMS. Recorded cases of cancer and other required information during 2011, 2012 and 2013 were extracted from the patients' medical records and added to the checklist regarding the objectives of the study. The demographic data of the patients, including age, gender, and the type of cancer, was kept in their medical records. Finally, the obtained data was analyzed using SPSS (V:15), χ^2 and ANOVA test. P $\leq$ 0.05 was considered as the significant level.

3. Results

During 2011 - 2013, 2631 biopsy samples from 12 different tissues of the body were referred to the pathology wards at BUMS' educational hospitals, among which 1349 (51.3 %) were of men and 1282 (48.7 %) were of women (Table 1). Minimum and maximum age range of all those referred to the pathology wards was estimated at 1 - 101.

Out of 2631 biopsy cases referred to the pathology wards at BUMS' educational hospitals, 458 (17.40 %) were reported to have cancer. Of all the survivors of different cancers 257 (56.11 %) were men and 201 (43.88 %) were women (Table 2); and their mean age was 60.35 ± 17.15 years. There was also a significant relationship between sex and incidence of cancer (P = 0.001).

The most common cancers were those of the brain and the spinal cord (15.1%), skin (14.8%), and breast (14%) (Figure 1). The most common cancer in the age group under 50 was breast cancer (29.5%) and in the age group over 50 was bladder cancer (14.7%). The highest frequency of cancer belonged to the age group 50-70 (44.5%). According to the

Table 1. Demographic Characteristics of Samples Referred to the Pathology Wards of the Educational Hospitals of Birjand During 2011 - 2013

Spicifications	No. (%)
Sex	
Women	1282 (48.7)
Men	1349 (51.3)
Age	
< 20	129 (4.9)
20 - 40	584 (22.2)
40 - 60	804 (30.6)
> 60	1114 (42.3)
Total	2631 (100)

present study, there was a significant relationship between age group and the type of cancer (P = 0.001).

Table 2. Comparing the Relative Frequency of Cancer in Terms of Demographic Characteristics in the Cases Referred to the Pathology Wards of Educational Hospitals in Birjand During 2011 - 2013

Specifications	No. (%)	P Value
Sex		P < 0.05
Women	201 (43.88)	
Men	257 (56.11)	
Age group		
< 20	10 (2.18)	
20 - 40	44 (9.60)	
40 - 60	168 (36.62)	
> 60	236 (51.52)	
total	458 (100)	

The results of the present study revealed that the most common cancers were those of the brain and the spine in the age group under 20 years old, breast cancer in the age group 20 - 40 and in the age group 40 - 60 years, and skin cancer in the age group above 60 years old. According to the literature, the lowest and the highest number of victims suffering from breast cancer were in the age group 20 - 40 years and above 60 years, respectively. Prostate, stomach, bladder and skin cancers were the most prevalent in the age group above 60. However, kidney, brain, and spinal cord cancers were the most prevalent in the age group under 20. Lung and esophagus cancers were the most prevalent in the age group 40 - 60 years old, but liver and colon cancers in the age group 20 - 40. The relationship between the type of cancer and age groups was significant according to Fisher's exact test.
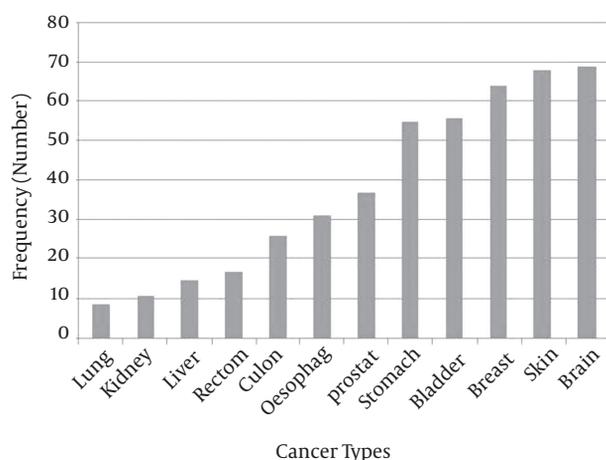
Figure 1. Frequency Distribution of Cancer Types in the Cases Referred to Pathology Wards of Birjand Educational Hospitals During 2011 - 2013

The maximum mean age among different types of cancer was 75.02 ± 8.63, which was recorded for Prostate cancer, and the minimum mean age of cancer among different types of cancer was 49.90 ± 12.86, which was for Breast cancer. According to ANOVA test, there was a significant difference in the mean age among different types of cancers.

The most common cancer in men was stomach cancer (17.1 %) and the most common cancer in women was breast cancer (31.8%). The least number of cancer occurrences were rectal (1.0%) and kidney (2.7%) cancers in women and men, respectively. Statistically, there was a significant relationship between sex and type of cancer through χ^2 test (P = 0.001).

4. Discussion

Generally speaking, the occurrence of cancer is different in various regions of the world. Lung, prostate, pancreas, lymph nodes, leukemia, esophagus, stomach, bladder, kidney, and pharynx cancers are the world's ten most prevalent cancers in men and lung, breast, pancreas, lymph node, leukemia, stomach, cervix, kidney, rectum, and bladder cancers are respectively the world's ten most common cancers in women (9).

In a 10-year study of cancer among women in the northern provinces of Iran, Tayebi et al. showed that breast cancer (41.4%) and esophagus cancer (10.3%) were the most frequent in men and women, respectively (10). According to a study by Mohaghegh et al. in Markazi province, breast and skin cancers were the most common ones in women and men, respectively (11). The results of the present study also revealed that the most common cancers in women and

men were breast and stomach cancers, respectively; something that can be caused by lifestyle and dietary habits of people. However, genes are of great significance in the occurrence of cancer in different populations (10).

According to different studies carried out all over the country, the mean age of cancer victims was 56 - 57 years (6), but in some other cases 70 - 74 years (5);this differs from the mean age obtained from the results of the present study because cancer occurrence is lower in this province.

Results of studying age patterns in developed countries show that mean age of cancer occurrence is 80 - 84 years old, which can be due to different lifestyles in different geographical regions of every country (12).

Analysis of the distribution of different types of cancers, in both males and females in different age groups, reveals that the risk of getting cancer in men is higher than that of women. The number of malignant cancer cases in men after the age of 70 is 2.5 times more than that of women, which conforms to the results of our study. The present study shows that stomach, bladder, and lung cancers in men occur two times more than they do in women. Conversely, esophagus cancer is more prevalent in women (8).

A study of age patterns of different cancers in Eastern Azarbayejan, in 2009 showed that 58.5 % of patients were males and 41.4% were females (13). This finding is in agreement with the results of the current study.

Considering the epidemiologic status and the number of cancer occurrences in people over the age of 25 in the South Kordestan province, most cancer occurrences were in the age group over 75 years old (14). A study of the number of cancer occurrences in Ilam revealed that most cancer occurrences in men and women were in the age groups of 70 - 74 and 60 - 65 years old, respectively. According to the above study, the lowest number of cancer occurrences belonged to the age group between 0 and 4 year(s) old, which is in accordance with the findings of the present study (15).

Although, according to studies carried out in the United States, stomach cancer was the first leading cause of death since 1980, it is now replaced by lung cancer. In Japan, the first cause of death due to cancer is stomach cancer. In developing countries, like Iran, stomach and esophagus cancers are still among the most prevalent ones. In the west of Iran and other areas of the country, increase in the number of cancer occurrences, especially stomach cancer is significantly high, which is taken as a major problem (13, 16, 17). In addition, the results of the current study also indicate a high number of stomach cancer victims in men and esophagus cancer ones in women. Although the frequency of skin cancers has been reducing, the number of age-specific occurrences and the number of patients are increasing. Although cancer is not confined to a certain age

group, most cancers occur after the age of 70 years old (18). The results of our study also indicate that most skin cancers occur in the age group over 60 years old.

Considering more body coverage in women compared to men, the number of cancer occurrences in men and in jobs which necessitate more exposure to sunlight and ultraviolet radiation has increased. This shows the need for more preventive measures to be taken in these groups. On the other hand, because of the high number of cancer occurrences and the limited required researches, it is suggested that more studies be carried out on risk factors and their preventive ways, and the feasibility of establishing cancer control programs. But findings of the present study indicate a higher percentage of skin cancer occurrences in women than men, something which requires more research in this respect (18). Based on the results obtained from the current study, as well as other studies, skin cancer is the most common type among the elderly which is of high significance during the aging process (8).

In a study carried out by Akbarzadeh Pasha et al. in Mazandaran province on the prevalence of bladder cancer, the number of bladder cancer victims out of one hundred thousand was 18.8 and 3.6 in men and women, respectively, which agrees to the findings of the present study according to which the number of cancer occurrences in men (15.5 %) is twice that of women (7.5 %) (19).

Regarding the importance of most cancers and the possibility of their prevention and treatment in the early stages through carrying out more researches to find risk factors for more common cancers in the area, officials can use mass media for further awareness of the public and their education and also to help patients before they pass away as a result of lack of awareness in advance.

4.1. Weaknesses and Strengths

Providing the initial demographic data for the following studies and finding the deficits in the studied cases can be named as strengths of the present study. However, it should be said that this study is limited by deficits in the studied cases and the probability of sending some patients to other equipped health cancers in big cities, which can affect the statistics; therefore, it is suggested to conduct researches on lifestyle and environmental and genetic risk factors.

Acknowledgments

Footnotes

References

1. Alison MR. Cancer. In: Basingstoke , editor. Encyclopedia of life sciences. Imperial College School of Medicine, London, UK: Nature Publishing Group; 2001. .

2. Khajehkazemi R, Sadeghirad B, Karamouzian M, Fallah MS, Mehrolhassani MH, Dehnavieh R, et al. The projection of burden of disease in Islamic Republic of Iran to 2025. *PLoS One.* 2013;**8**(10):76881. doi: 10.1371/journal.pone.0076881. [PubMed: 24146941].

3. Omar S, Alieldin NH, Khatib OM. Cancer magnitude, challenges and control in the Eastern Mediterranean region. *East Mediterr Health J.* 2007;**13**(6):1486–96. [PubMed: 18341198].

4. Garcia M, Jemal A, Ward EM, Center MM, Hao Y, Siegel RL. Global Cancer Facts and Figures 2007 Atlanta: American Cancer Society; 2007. Available from: http://www.cancer.org/research/cancerfactsfigures/globalcancerfactsfigures/global-cancer-facts-figures-2007.

5. Vakili M, Pirdehghan A, Adimi M, Sadeghian M, Akhondi M. Epidemiology and trend of cancer in Yazd, a central province of Iran, 2005-2009. *J Res Health Sci.* 2014;**14**(3):210–3. [PubMed: 25209908].

6. Mokarian F, Ramezani MA, Heydari K, Tabatabaeian M, Tavazohi H. Epidemiology and trend of cancer in Isfahan 2005-2010. *J Res Med Sci.* 2011;**16**(9):1228–33. [PubMed: 22973394].

7. Ferlay J, Steliarova-Foucher E, Lortet-Tieulent J, Rosso S, Coebergh JW, Comber H, et al. Cancer incidence and mortality patterns in Europe: estimates for 40 countries in 2012. *Eur J Cancer.* 2013;**49**(6):1374–403. doi: 10.1016/j.ejca.2012.12.027. [PubMed: 23485231].

8. Rafie M, Alizadeh M, Eshrati B, Hatami H, Akbari ME. The geographical distribution of the incidence and survival rates in older people with cancer in Iran [in Persian]. Iran: Payesh; 2012. pp. 603–9.

9. Vrdoljak E, Wojtukiewicz MZ, Pienkowski T, Bodoky G, Berzinec P, Finek J, et al. Cancer epidemiology in Central, South and Eastern European countries. *Croat Med J.* 2011;**52**(4):478–87. doi: 10.3325/cmj.2011.52.478. [PubMed: 21853542].

10. Tayebi M, Shabestani Monfared A, Moslemi D. A 10 year survery of cancer in patients who referred to shahid rajai radiotherapy cancer in North of Iran (2000 - 2009) [in Persian]. *JBUMS.* 2012;**14**(6):97–101.

11. Mohaghegh F, Hamta A, Shariatzadeh MA. The study of cancer incidence and cancer registration in Markazi province between 2001-2006 and comparison with national statistics [in Persian]. *Arak Med Res J.* 2008;**11**(2):84–92.

12. Ellison LF, Wilkins K. Canadian trends in cancer prevalence. *Health Rep.* 2012;**23**(1):7–16. [PubMed: 22590801].

13. Einalzadeh AH, Kousha A, Abdullahi L, Golzari MN, Javaheri J. Pattern of Age Distribution of Different Cancers in East Azerbaijan province, IRAN. *J Kerman univ MedSci.* 2012;**19**(3):308–16.

14. Esmail Nasab M, Moradi G, Zareie M, Ghaderi E, Gheytasi B. Survey of epidemilogic status and incidence rates of cancers in the patients above 15 years old in Kurdistan province [in Persian]. *SJKU.* 2007;**11**(4):18–25.

15. Hemati K, Mohagheghi MA, Mousavi Jarahi A, Khabazkhub M. Cancer Incidence in Ilam [in Persian]. *Scientific J Ilam Univ Med Sci.* 2009;**17**(3):24–9.

16. Hasanzadeh J, Hosseini Nezhad Z, Molavi-e Vardanjani H, Farahmand M. Gender Differences in Esophagus, Stomach, Colon and Rectum

Cancers in Fars, Iran, During 2009-2010: An Epidemiological Population Based Study [in Persian]. *J Rafsenjan Univ Med Sci.* 2013;**12**(5):333–42.

17. Rahimi F, Heidari M. Time Trend Analysisof Stomach Cancer Incidence in the West ofIran [in Persian]. *J health and Development.* 2012;**1**(2):100–11.

18. Afzali M, Mirzaie M, Saadati H, Mazloomi-Mahmoodabadi SS. Epidmiology of skin cancer and changes in its trends in Iran [in Persian]. *Feyz J KAUMS.* 2013;**17**(5):501–11.

19. Akbarzadeh pasha A, Mohammadi kenari H, Alizadeh navaei R, Hajian K. The Incidence of Bladder Cancer in Mazandaran Province for Three Years [in Persian]. *JBUMS.* 2012;**14**(3):80–4.